COMMANDERS DIGEST
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A REPORT ON AMERICAN MILITARY

UNIFORMS in FY 76

To obtain the cloth and uniform items that keep America's Service personnel the best dressed in the world, the Defense Personnel Support Center (DPSC) in Philadelphia must play a demanding role in projecting needs and coping with such complex problems as reduced availability of materials and inflation. Textile and uniform costs in FY 74 totaled $427 million; procurements this Fiscal Year are at a slightly increased level.

One problem DPSC has been facing is the clothing needs by women who have been entering the Armed Forces at an increasing rate. The number in the Services at the end of FY 72 was 46,700—a figure which projections say will double to 99,000 by the end of FY 75. To clothe the women in Service during FY 74 cost the Services $16.1 million in key uniform items and $1.9 million in footwear. Complicating the problem is not just the need to contract for the items, but to obtain the textiles for the contractors and also to project needs 18 months in advance of issue. Procurement action for a finished item starts one year prior to issue.

The same lead time problems exist for clothing support of men in the Services.

An indication of costs for men's uniforms can be seen in FY 74 figures: for distinctive uniforms the Army requested more than $41 million, the Air Force more than $22 million, the Marine Corps in excess of $14 million, and the Navy above $29 million. At the same time more than $60 million was requested by all the Services for common items for men, such as undergarments, socks, belts, and work caps.

It is of interest to note that individual items, while worth only pennies or dollars, quickly translate into million-dollar figures. In FY 74 a Serviceman wore an undershirt that cost the government only 87 cents; overall the Services spent $7 million for this item in that year. The dress shoe he wore cost $10.50; but in that year the Services requested $11 million worth of such shoes.

The largest single item requested in terms of dollar value is the black leather combat boot, which the Services in FY 74 requested to the tune of $22 million.

Purchase requirements are complicated by the need for 107 sizes for the combat boot and 113 sizes for the black dress shoe.

Servicemen with hard-to-fit sizes rely for apparel items on the manufacturing facility at DPSC Philadelphia, and for shoes at the DPSC orthopedic facility at Boston.

To encourage industry participation in clothing procurement, DPSC representatives participate in industry association meetings, and provide liaison with contractors. These liaison visits are especially important in helping to overcome

With expansion of the Women's Army Corps and increases in military occupational specialities, the need for a pantsuit is being tested. The pantsuit will not replace the fatigues.

During the past few years, the Department of Defense (DOD) has encountered increasing problems in the procurement of clothing and textile items to meet DoD requirements. These problems resulted primarily because of current market conditions (demand exceeding supply, increased exports, shortages of skilled labor), overly complex and outdated specifications, requirements that may not reflect current industry practices, and lack of standardization among the Services. As a result of the large civilian demand and restrictive DoD requirements, there was a general lack of response within the textile and clothing industry to bid on DoD solicitations.

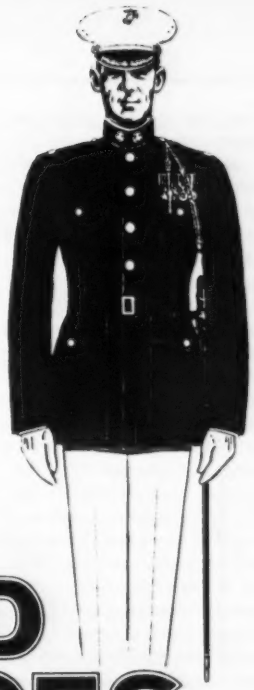
In view of this situation, a DoD Clothing and Textile Standardization Panel was established. This panel, which operates under the overall

problems related to materiel shortage and production capability.

The current downturn in the general economics of the country have led to an increasing role by DPSC in the economy of affected areas.

Tight money in DoD demands that DPSC both provide adequate support to the Services, and bolster the economy in the most efficient way. More than 60 per cent of the dollar value of DPSC contracts is being placed with small business.

Inflation also has hit the clothing and textile field. To cope with this problem DPSC is subjecting lead times to careful analysis with each procurement in order to take advantage of improved conditions with the market place.



How the Defense Personnel Support Center Makes Our Military the

BEST DRESSED ARMED FORCES in the WORLD

monitorship of the Defense Materiel Specifications and Standards Board, is comprised of members from each of the Services, the Defense Supply Agency and the Office of the Assistant Secretary of Defense (Installations and Logistics). The primary functions of the clothing panel include the following:

- Test and introduction of uniforms into the various Services.
- Standardization of nondistinctive clothing, textiles, and other DoD procured items based on textile technology.
- Establishment of standards for use in determining the number of sizes for uniforms.
- Currency of specifications.
- Adoption of commercially available fabrics and clothing items for DoD military personnel.
- The centralization and consolidation of research and development in clothing and textiles within DoD.
- The effect of current procurement practices and regulations upon DoD procurement of clothing and textiles.
- Alternative approaches for easing the procurement problem, including:
  a. Use of stockpiling.
  b. Use of Government-owned or operated facilities.
  c. Off-shore procurement.
- The extent to which long term research and development efforts could yield improvements in our procurement posture.
- Any other areas, such as the Government's relationship with industry and ecological limitations, that may affect the procurement of items required by DoD.

About the Clothing & Textile Panel . . .

Several subcommittees have been established to study specific problem areas; these include committees on specifications, women's clothing, sizing and tariffs and procurement.

It is anticipated that the efforts of the DoD Clothing and Textile Panel will uncover and eventually resolve many of the problems that presently exist in the various DoD clothing and textile programs. When the results of the panel's findings are integrated into the individual DoD component programs, significant steps will have been taken to assure the maintenance of adequate supply support of clothing and textile items to our operating forces.

CLOTHING the VOLUNTEER SOLDIER

The Clothing, Equipment and Materials Engineering Laboratory (CEMEL) of the U.S. Army Natick Development Center in Natick, Massachusetts, enjoys a unique position within the Army Materiel Command. It conducts research and development over the entire spectrum—from basic research to engineering development—and in addition, provides engineering support to the procuring agency (Defense Personnel Support Center) that purchases the many personnel items required by the Army. Simply stated, the Natick Development Center develops all clothing and equipment which can be used to protect the men and women of the Army. Procurement of these items exceeds $500 million a year and involves approximately 4,000 national stock numbers.

The number and nature of individual items that are required for Army men and women is wide and varied. Not only do these items clothe Army men and women from head to toe, but include items such as skiis, load-carrying equipment,

The all-purpose lightweight, individual carrying equipment can handle almost any type of combat load from mortar rounds to radios.

New fabrics are tested at Natick Laboratories' fire test facility using full size, heat sensitive mannequins.

tents, and body armor. The environments for which these items are designed are also impressive. The Natick Development Center has to think of people who operate in climates from -60° to +120°F. Protecting a man from weather and from ballistic projectiles is only part of the problem. How about sunburn? Natick Center has a sunburn preventive lotion. How about mosquitoes? Natick Center has a mosquito repellent. How about climbing an icy mountain? Natick Center has the crampons. How do you heat combat rations? Natick Center has the fuel tablets. Where do the chaplains get their materials? You guessed it—at the Natick Center. What protects a helicopter pilot in a fiery crash? A flame protective coverall from Natick Center. And when the other side is attempting to spot our soldiers in the field with a number of sophisticated detection devices, it is the Natick Center's responsibility for developing multi-purpose camouflage systems for the soldiers.

Another major area of effort at the Natick Center is uniforms: it is the place where all dress uniforms for the men and women of the Army originate. The uniform development involves a combination of technologies, traditions, and individual tastes. The mechanism by which a new uniform finds its way into the system starts with the Army Uniform Board consisting of 13 male and female general officers, and 2 command sergeants major. The Director, Clothing, Equipment and Materials Engineering Laboratory, serves as a non-voting member of this board and acts as technical advisor. Together with other members of Natick Center staff, he presents to the board the information and samples on items required by the board.

Let's follow the birth of such a uniform item. The Army Uniform Board may suggest the development of a new clothing item because there have been growing requests on the part of the Army men and women for a new item. The origin may be motivated by an industrial change or by a reduction in cost. For example, the Army currently has both a raincoat and an overcoat in the system. But in

Two styles of the combination overcoat raincoat are now being wear-tested by the Army. With a removeable zipper liner, the overcoat/raincoat will offer styling and financial savings.

today's world, many people prefer a combination raincoat/overcoat in the form of a raincoat with removable liner. This not only is a sensible move in order to have Army uniforms keep abreast of contemporary styles, but in this case, offers the potential of a significant saving in "bag item" costs. "Bag items" are those issued to the Army men and women upon their enlistment. In the case of men, the standard overcoat costs $42.90, and the standard raincoat costs $11.30. By comparison, an overcoat/raincoat would cost approximately $35.00. This cost reduction of approximately $19.20 would be achieved in women's coats as well. When this is multiplied by an Army of 785,000 people, the resulting saving of $15,072,000 represents a healthy return on the investment in development costs.

Recommendations for such new items are forwarded to the Army Chief of Staff and upon approval, Natick Center is authorized to proceed. At this point, a number of factors will be considered by Natick. Considering the range of environments in which Army personnel operate, would a standard commercial type of coat be acceptable? What are the cost aspects apt to be in the future? Where would insignia be placed? What are the peculiar military requirements for this coat, if any that would require a change from acceptable commercial materials? These are some of the many questions that must be asked. There are reasons for this that are not generally appreciated by many people in the Army.

From a cost standpoint, Natick is the first in a series of budget watch-dogs, since the decisions made mean considerable expenditure of future Army funds. Unlike the civilian consumer who has the immediate option of abandoning an item that is too costly, the massive supply and inventory system within the Army means that the Army cannot readily shift from one type of product to another. Thus, any decision made must be weighed against the cost

Two WAC uniforms currently being tested in Texas.

and availability implications for the future, as well as the logistic problems in a large system.

Another interesting aspect of new uniform selection is the "peculiar military requirements" of such materials. One of these is the extremely high rate of wear for Army uniforms. A classic example of this problem occurred with the desire of the Women's Army Corps (WAC) to adopt a new polyester double-knit uniform. Double-knit polyester materials have both advantages and disadvantages over the standard cotton cord material in the current WAC uniform. The first disadvantage is that double-knit materials snag more readily. The second is that the chemical nature of polyester tends to attract and retain grease and oil stains more than cotton. Problems of clothing snagging and staining are more severe for the Army than they are in the civilian area. Civilian clothes are often patterned or multicolored so that even if a snag occurs, it is not highly visible to the eye. However, on a straight one-color uniform, the snag or stain is immediately evident. Equally important is the fact that a WAC wears a uniform more times in a month than her civilian counterpart would wear a double-knit dress in a year. This high rate of wear increases the likelihood of soiling and staining.

The staining and soiling of polyester uniforms also creates a problem for the Army in terms of the available cleaning facilities. Army men and women must rely on simple washing machines and dryers, with no specialty chemicals or spotting compounds. This restriction reflects both safety and environmental considerations. Further, there may not be the time or facilities to "touch up" garments. This shifts the burden to the fabric and garment. They must be amenable to effective cleaning with little or no unusual effort. All in all, these factors generate the "peculiar military characteristics" mentioned earlier, and serve to explain why the Army cannot readily adopt commercial fabrics and new features/finishes without careful consideration.

To return to an item being developed under the direction of the Army Uniform Board, the next step is the development of several design prototypes. These provide a mechanism for aesthetic evaluation, and for critical reviews aimed at potential cost reductions. For example, prototypes of the new men's raincoat/liner revealed several areas in which items such as cuff tabs could be eliminated to save both materials and labor without detracting from the functional aspects or appearance of the coat.

Peculiar military requirements often dictate the fabric of a uniform. For example the new Army polyester/cotton class "B" shirt must be comfortable and heavy enough to support insignia, badges, and ribbons normally worn on an outer uniform garment.

The prototype models also serve to verify that the drape and body of the fabrics selected are proper for the garment. In addition, the garment construction is viewed to make sure it is amenable to economic production, under competitive bidding procedures and the most recent manufacturing technologies. This is one reason why Natick maintains an aggressive program of industry contact. Its personnel belong to and participate in a number of professional associations relating to the clothing and textile industry.

When the prototype uniforms are approved at Natick, they are presented to the Army Uniform Board. Army Uniform Board members will carefully evaluate and question the total spectrum of the features Natick has presented. Can the coat be expected to stand up in a variety of environments throughout the world? Is it easy to maintain? What is its expected life? What will it cost in production? Are there any material problems involved that could present future difficulties in terms of shortages, or unforeseen costs? In addition, the board will carefully consider the appearance of the item, bearing in mind the balances that must be maintained among the public's opinion, military tradition, and military appearance—and equally important—acceptance on the part of the young man or woman the Army wants to attract on a volunteer basis.

The Army Uniform Board's screening of the prototype uniforms is only the first step. Once the board agrees that a uniform merits testing, the center, usually depending upon industry, will obtain a number of test items. Typically, this will run between 200-500 items, and that presents another problem. For an industry where high volume production is the key to profits, the prospect of a contract to produce a few hundred items does not create any jubilation. Moreover, low volume production is not only costly, but since a true production environment does not exist, it is possible for the small "glitches", which frequently show up in the early stages of production, to occur. This, of course, is the worst combination of events, since the items being produced for the Army in such cases are destined for test, and any shortcomings in the uniforms will assure an unpleasant test report.

This Army Green pantsuit, currently undergoing test at Ft. Devens, Massachusetts, and at Ft. Dix, New Jersey, also will be tested by a number of military police units.

One of two styles of Class "A" uniform presently being tested for possible replacement for the current Army Green uniform.

New uniforms to be tested by the Army will be subjected to all of the environmental conditions that can be anticipated. Temperate zone uniforms will be tested in many locations in the U.S., and in many cases, test items will also be sent to overseas commands such as Europe. For extreme weather items, tests will be conducted in the field in such far-flung locations as Ft. Greely, Alaska, where the good test season is from November to March with -50°F temperatures quite likely, to the Panama Canal test zone, which yields the other extreme of temperature and humidity. Concurrently, tests may be performed in the environmental test chambers at Natick, under the control of the Army Research Institute of Environmental Medicine (ARIEM), which is part of the Army Surgeon General's organization. From such laboratory tests, energy consumption and heat stress can be measured and predicted with considerable accuracy. Many of these physiological stress measurements have been invaluable in research and development efforts to obtain major improvements in clothing and textile items—including handwear, footwear, and headwear—and have yielded significant new products for the consumer as well.

Recognizing that Army uniforms will be unsatisfactory unless they have the proper field life, wear tests may often extend to six months and beyond. Intensive wear, coupled with a variety of assignments and environments under controlled conditions yields much of the data sought. In addition, subjective comments from the test subjects—who are randomly picked personnel—are obtained through questionnaires prepared by experienced test personnel.

John V.E. Hansen, Director, Clothing, Equipment and Materials Engineering Laboratory.

When the tests are complete, the results may dictate modification of the uniform and retest, or the results may well warrant recommending adoption. Such recommendations are made to the Army Uniform Board, which in turn will vote on the issue, and, if the Army Chief of Staff approves the Army Uniform Board recommendation, a new uniform item is born.

Once an item is adopted, procurement lies ahead. For optional items, which Army personnel purchase through the Post Exchanges, the industry is immediately advised of the new item. They, in turn, will rely on specifications and information developed at Natick Development Center to prepare production prototypes for Natick Center's approval. When approved, the manufacturer is given a certificate which authorizes him to produce the item for sale to the Army and Air Force Exchange Service (AAFES).

During the life-time of an item being produced by industry for the Exchange Service, Natick will maintain an aggressive quality control and review effort. Failure of a uniform manufacturer to maintain the requisite quality can, and has, led to revocation of the certificate needed to produce for AAFES.

If a uniform item is adopted for issue to the soldier, it will be procurred by the Defense Personnel Support Center (DPSC), Philadelphia, based on detailed specifications prepared by the Natick Center. These specifications are to be used for competitive procurements by all interested industry members, and therefore must leave nothing open to question, misinterpretation, or omission. While such detailed specifications may appear to be unnecessary to the uninitiated, and possibly overwhelming to those who have never done business with the Government, they not only are required by law to assure equality in bidding, but also to maintain the requisite quality. It is interesting to watch the recent trend in industry which tends to rely more and more on Government-type specifications. In many cases, specifications developed at Natick have been readily adopted by industry for its use in procuring items from suppliers.

Nor does the process cease with the Development Center's releasing its specification (commonly referenced as the TDP or Technical Data Package) to the procurement facility at DPSC. When production is initiated, and during the life of every uniform item, Natick personnel provide the engineering support to procurement. This ranges from assistance to contractors who are working with an unfamiliar specification to the evaluation of contractor-suggested changes to improve items or reduce costs. Similarly, should the need arise for the Government to be legally represented on technical problems, the professional personnel at Natick Center are the ones who will appear as the experts.

The civilian and military personnel at Natick work hand-in-hand, and enjoy their involvement on items that are needed to support the soldier. It is one of the few Army centers which encompasses the full spectrum of research, development, and logistic support; and its efforts and products are utilized by virtually all Government agencies.

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NAVY UNIFORMS Pride, Distinction & Controversy

Navy uniforms have been a source of pride, distinction, concern—and controversy—since the early days of the Service. The Marine Committee of the Continental Congress, while sitting in Philadelphia on September 5, 1776, authorized a "Uniform for the Officers of the Navy of the United States . . . ." The authorized uniform evidently did not please all of the Navy officers of that time, for in the Library of Congress there reposes a manuscript which contains a proposal for a different naval uniform for officers. Captioned "Uniform dress for the Navy agreed to at Boston by the major part of the captains, March, 1777", this first evidence of controversy over Navy uniforms underscores the pride, affection and concern of Naval personnel for their distinctive uniforms which continues to this day.

A Navy uniform office has been in existence from 1779 when Congress established a Board of Admiralty concerned with "all warlike stores, clothing, etc." Uniform style changes during the early days of the Navy largely paralleled civilian clothing trends, with little "uniformity" apparent, especially in enlisted men's uniforms. As the Nation, and the Navy, grew and became a world power, more emphasis was placed upon quality, appearance and the development of associated regulations.

Thus, a Permanent Navy Uniform Board was chartered by the Secretary of the Navy and established primarily for the purpose of studying uniforms, considering changes, reviewing suggestions for new or changes in standard items of uniforms and clothing, maintaining close contact with other Services concerning uniforms, studying preparation of specifications concerning design and material of uniforms, establishing uniform allowances and studying procurement methods. After each proposal was carefully studied and reviewed by the permanent staff, the proposals were presented to the regular members of the board and their recommendations were then forwarded to the Secretary of the Navy via the Chief of Naval Operations for approval.

On June 23, 1967 the Secretary of the Navy delegated the authority for convening a Navy Uniform Board and approving Navy uniforms to the Chief of Naval Operations. On July 30, 1971, the present Navy Uniform Board, permanent staff and membership was established. The functions of the current Navy Uniform Board remain primarily the same as the Permanent Navy Uniform Board, mentioned above, with the exception of the Chief of Naval Operations' delegated authority to approve the board's recommendations instead of the Secretary of the Navy.

The regular members of the Navy Uniform Board are Chief of Naval Personnel, President; Commander, Naval Supply Systems Command; Assistant Chief of Naval Personnel for Human Goals; one male and one female junior officer representative; Master Chief Petty Officer of the Navy; and one male and one female enlisted representative. Alternate members, who are able to speak authoritatively for their respective commands, offices or bureaus, may be designated by the president or any regular member. The permanent staff consists of secretary of the board, recorder of the board, executive assistant and administrative assistant.

The present Navy Uniform Board maintains some files and copies of old uniform regulations dating back to 1776. According to the files, prior to 1776 sailors wore petticoat

Two sailors display the old and new enlisted uniforms. At left is the old blue uniform with white dixie cup hat and at right is the new double breasted service dress blue uniform. The old uniform may still be worn by enlisted men who have an expiration of service date prior to July 1, 1976.

trousers that came to the knees and could be tied. It wasn't until 1817 that the traditional bell bottomed trousers came into being and an official Navy uniform was prescribed for enlisted men. This uniform consisted of a brim hat, blue jacket, red waistcoat and blue bell bottomed trousers.

The square jumper collar and neckerchief originated when English sailors wore their hair long and braided in a pigtail. The braided pigtail was greased and the square collar and neckerchief afforded protection for the uniform from the tar which the sailors used on their long braid. The pigtail hairstyle went out in 1810, however the black neckerchief has remained an integral part of the Navy uniform for decorative purposes to this day.

A variety of hats has been worn by Navymen in the past, but the dixie cup (white hat), as we know it today, has been in existence since 1913. A white hat with rolled up brim, similar to the present white hat, however, was first introduced in 1866.

As previously stated, bell bottoms were authorized in 1817, and they had only seven buttons in front. It wasn't until the broadfall front was enlarged in 1894 that the 13 buttons were put on the bell bottom trousers and then only to add symmetry of design. There has been a belief that the 13 button style trousers represented the original 13 colonies of the United States, but like so many other sea stories, there is no basis for this one. In 1948 fly zippers and pockets were introduced for these trousers, however, the 13 buttons were reinstated in 1956 due to requests from our sailors.

Officers of the Navy wore single breasted service coats during World War I but this single breasted uniform was abolished in 1919 and the familiar double breasted service dress blue uniform as we know it today was adopted for certain officers. All officers were required to have this uniform by 1921 and since that date the changes to this uniform have been very minor. Both officers and chief petty officers have always been satisfied with the nautical and distinctive double breasted service dress blue uniform.

After World War II the Navy considered a uniform for enlisted men consisting of jacket, white shirt, tie and trousers, however, at that time sailors indicated a dislike for the proposal and the idea was dropped.

It wasn't until recently that some of the greatest changes in uniforms began taking place. It was considered that some changes should be made to keep up with the trends of the modern times. Consequently, a poll conducted by the Navy in 1970 indicated that the majority of enlisted men preferred a coat and tie style uniform to the jumper and bell bottoms. Since officers and chief petty officers had a good opinion of their dress blues, it appeared desirable to go to that

Three Navy work uniforms: left is the flare legged dungaree trousers with chambray shirt; center is the presently optional work blues; and at right is the lightweight blue coverall uniform.

style for all Navymen. One basic uniform for all Navymen from seaman to admiral, is consistent with the idea of "One Navy, United in Purpose, Striving for Common Goals," and is consistent with the uniform policies of all other U.S. Services.

The new double breasted service dress blue uniform was issued to male recruits beginning July 1, 1973. After July 1, 1975 all Navymen except those with an expiration of service prior to July 1, 1976 are required to be in the new style uniform. This uniform is identical to the service dress blue uniform currently worn by officers and chief petty officers except that the buttons, cap device and belt buckle are silver and 5¼" enlisted service stripes are worn.

Uniforms for our Navy women, as for men, are under constant review. Commencing July 1, 1975, Navy women recruits will be issued a new service dress blue uniform, identical to the women officers' and chief petty officers' except silver buttons and the enlisted men's silver cap device will be worn. The current style of the women's

service dress blue uniform has been in existence for some time with only minor changes, however, a service dress, flared slack has recently been approved for wear with the service dress coat, paralleling the civilian trend toward dressy pantsuits.

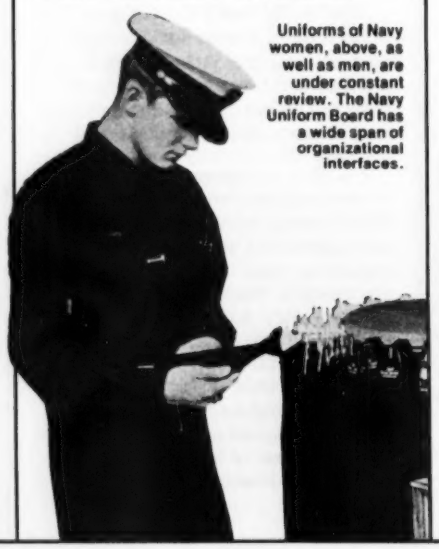
The Navy Uniform Board has a wide span of organizational interfaces. All recommendations regarding uniforms are fully researched, staffed and coordinated with liaison offices before presentations to the Navy Uniform Board members are made and recommendations submitted to the Chief of Naval Operations. Some of these liaison offices include NAVSUPSYSCOM, NAVSEACOM, NAVCOMPT, JAG, BUMED, NAVCRUITCOM, CNET, CNTT (RTCs), CHINFO, Defense Personnel Support Center, Fleet Material Support Office, Navy Clothing and Textile Research Unit, Natick, Massachusetts, Navy Uniform Shop, Brooklyn, New York, Army, Air Force, Marine Corps and Coast Guard Uniform Boards and Institute of Heraldry.

The Navy Clothing and Textile Research Unit in Natick, Massachusetts, by authority of the Commander, Naval Supply Systems Command, makes up prototype clothing and these prototypes are reviewed by the board to determine if the item should be recommended for adoption. Before the recommendations are forwarded to the Chief of Naval Operations, service tests are made within the Navy. If adopted, specifications are written and patterns are developed by the Navy Natick Laboratories. Defense Personnel Support Center is presented with a supply request package which includes complete specifications, sizes and quantities required. All issue uniform items are coordinated by a joint-Service committee for standardization. DPSC then requests bids from civilian industry, lets contracts and stocks the clothing to be ultimately requisitioned by Navy activities.

In addition to the duties involving the board itself, the Navy Uniform Board Staff is responsible for any correspondence concerning uniform matters from the White House, Congress, Secretary of Defense, Secretary of the Navy, Chief of Naval Operations and Bureau of Naval Personnel.

The staff also represents the Navy Uniform Board by participation on the DoD Clothing and Textile Panel, Ad Hoc Committee for Women's Items of the DoD Clothing and Textile Panel, Army, Marine Corps, Air Force and Coast Guard Uniform Board meetings by invitation, NAVSEACOM Habitability Conference, NAVSEC Shipboard Laundry Committee, CNET visits to recruit training centers, NAVSUP/NC&TRU research and development workshops, and master chief petty officer, fleet, force and command conferences.

The Navy Uniform Board continually strives to update the uniform styles, commensurate with function and fashion, while at the same time maintaining a traditional and nautical military appearance.



Uniforms of Navy women, above, as well as men, are under constant review. The Navy Uniform Board has a wide span of organizational interfaces.

NCTU OUTFITS the FLEET

The Navy Clothing and Textile Research Unit (NCTRU), located 20 miles west of Boston, is responsible for designing all clothing worn by most Naval personnel. Consequently, it conducts research on fabrics and materials which it develops into clothing items that it tests and evaluates before introduction to the fleet.

Dress and work uniforms, fire-protective clothing, cold-weather garments, insignia, women's wear, boots and shoes, damage-control suits, deep-sea swimsuit materials, buoyant-ballistic vests, and handwear are only some of the clothing products developed by NCTRU.

Navy men and women, unlike their counterparts in the other Services, accomplish the Navy's mission at sea, in the air, on land and beneath the oceans throughout the world. Consequently, the Navy must maintain a separate clothing laboratory whose professional staff has an intimate knowledge of both the everyday requirements of the average sailor and the unique needs of the specialist.

To complement its experienced scientists, engineers, and technologists, NCTRU has constructed a laboratory building that houses extensive engineering, physiological, and materials test facilities. Among its equipment the lab features the Environmental Test Chamber that reproduces temperature and relative humidity extremes ranging from -40° to 200°F at 5 to 100 per cent RH, the Hydro-Environment Simulator that reproduces air-sea surface temperature conditions existing anywhere on earth, and the Hydrospace Simulator Facility which monitors material test properties in simulated water

environments to depths of 1,000 feet of sea water.

The four clothing items discussed in this article highlight the diversity and the extent of the achievements of the Navy Clothing and Textile Research Unit.

The newest version of the Navy's Utility Outfit, the basic work clothing that enlisted personnel wear aboard ship, demonstrates NCTRU's sensitivity to the desires of the sailor and its adaptation of the latest advances in fabric technology. It also proves that rapid changes in civilian clothing trends can make a military uniform outdated before it reaches the stock system.

Several years ago, the Navy decided to abandon its traditional dungaree and chambray-shirt work outfit because increasing numbers of enlisted men viewed these clothes as prisoners' garb. At that time, very few young people wore dungarees. NCTRU therefore designed a stylishly attractive, but functional, jumper and trouser combination. Ironically, by the time this new outfit worked its way into the Navy stock system, everyone from rock music stars to conventional suburbanites was wearing bell-bottomed jeans and chambray work-shirts—**the same outfit that the Navy had just abandoned after 75 years.**

Inspired by this almost universal trend toward jeans and workshirts, NCTRU has designed an entirely new work outfit that greatly resembles the old Navy dungaree uniform but is made of durable, easy-care polyester-cotton fabrics and can be worn by both men and women.

Field tests of this new outfit are scheduled for the fall and early winter of this year.

When it developed the decompression-chamber clothing, NCTRU filled a vital need for a small, specialized group of men who work in the increasingly important field of deep-sea exploration.

As advances in underwater exploration have occurred, divers plunged to greater ocean depths. This, in turn, caused them to remain in decompression chambers for longer periods of time to avoid caisson disease (commonly called the "bends," it is a sometimes fatal malady marked by neuralgic pains and paralysis produced by a too rapid decrease in air pressure after a stay in a compressed atmosphere). Since decompression chambers contain oxygen-enriched atmospheres, fires are a constant danger. Therefore, NCTRU was asked to develop clothing that was fire-retardant, comfortable, and durable.

The Navy Clothing and Textile Research Center develops environmental protective wear. From left is clothing for decompression-chamber personnel, proximity fire-fighters and submarine crews.

Since clothing specifically designed for use in decompression chambers did not exist, NCTRU evaluated many materials before selecting Durette as the best combination of comfort, durability, and flame retardancy. Durette is self-extinguishing in air and in the oxygen-enriched decompression chamber environments that are considered to represent the most fire-hazardous conditions normally encountered in diving operations.

Although this clothing is now used only in Navy decompression chambers, NCTRU scientists believe that this type of clothing could be used in hospital areas which require oxygen-enriched environments.

The military has a need for sophisticated fire-proximity garments for use in aircraft crash/rescue operations. NCTRU is the lead laboratory in a tri-service effort to develop this class of clothing.

Until recently, the aluminized firefighter's clothing, constructed of asbestos/cotton, weighed 26 pounds. With the development of an asbestos/Nomex material which can be spun into a finer yarn that results in a lighter material, the weight of this garment has been reduced to 13 pounds, without any reduction in its overall effectiveness. Moreover, this suit is now safer because it permits more mobility to the firefighter.

The clothing described in this article represents only part of the broad interests and varied activities of the Navy Clothing and Textile Research Unit in its support of the United States Navy as it enters its third century of proud service to our country.

A Glance Tells There's a MARINE!

The uniform worn by a member of a military organization is without doubt fascinating. It encompasses more than just a tailor's art or a designer's ideas, but is all the mystique that has descended from those first to enter the profession of arms to those presently engaged in the profession. It might manifest itself in a heraldic item, a color or a cut of cloth or in any of a hundred other ways, but it is there. And being there, it makes the military uniform different from all the other garments man may wear.

The Marine Corps uniform with its appropriate insignia is designed primarily to show at a glance the branch of service and grade of the individual authorized to wear it. The uniform represents visual evidence of the authority and responsibility vested in the individual by the U.S. Government.

The wearing of the uniform is a matter of personal pride to all Marine Corps personnel. Both officer and enlisted personnel are expected to maintain their uniforms and equipment in a neat and serviceable condition and by their appearance, set an example of neatness and strict conformity to regulations.

The Marine Corps has always taken pride in its uniform. Above are Marine riflemen during the Fight at Guantanamo during the Spanish-American War and below in their present-day dress blues.

The Permanent Marine Corps Uniform Board is a separate office in the headquarters structure which reports directly to and acts as an advisor to the Commandant on matters pertaining to uniforms and accessories. The board also is the coordinator between the various divisions of the headquarters and the Commandant on matters which effect the uniform.

The present T/O authorizes one officer, who is the secretary-recorder, and two civilians as the permanent personnel assigned to the Office of the Uniform Board.

The Permanent Marine Corps Uniform Board consists of a president who is a general officer on duty at Headquarters Marine Corps and appointed by the Commandant, and a field grade officer from each of the following departments:

Deputy Chief of Staff for Plans & Operations
Deputy Chief of Staff for Manpower
Director, Women Marines
Director, Manpower Plans & Policy Division
Director, Personnel Management Division
Deputy Chief of Staff for Installations & Logistics
Deputy Chief of Staff for Aviation
Fiscal Director of the Marine Corps
Director of Marine Corps Reserve
Inspector General of the Marine Corps
Director of Marine Corps History and Museums
Director of Intelligence

In addition, the Sergeant Major of the Marine Corps is a member of the board, voting only on matters pertaining to enlisted Marines.

The Board is responsible for the following:

- To conduct studies and make recommendations on matters relative to the design, material and the wearing of the uniform and accessories,
- To review military and civilian industry suggestions for new, or changes in, items of uniforms, materials and accessories,
- To recommend changes to clothing allowances,
- To sponsor the Marine Corps Uniform Regulations and to take necessary corrective action on matters pertaining to the uniforms by preparing correspondence, including directives, to field commands, and
- To, through the secretary-recorder, represent the Marine Corps and state approved policy to Department of Defense on standardization of uniforms and accessories. In addition, the secretary-recorder is required to maintain close liaison with the Army, Navy and Air Force Uniform Boards, and civilian manufacturers and distributors.

Men or women Marines wear their uniform as visual evidence of the authority and responsibility vested in the individual by the U.S. Government.

Working groups established by the president of the board perform important functions as investigative bodies by delving in depth into a particular subject, and their reports, along with all the regularly received suggestions and recommendations, are processed, staffed as necessary and prepared as agenda items with appropriate background material. The agenda is presented to the board at a meeting where each of the items is discussed in detail and a recommendation made to the Commandant. The minutes of the board's meeting are forwarded to the Commandant for decision. Items requiring action as a result of the Commandant's decision are forwarded to the cognizant staff agency. Originators of suggestions or recommendations are then notified as to the Commandant's decision.

TAKE NOTE...
Air Force Blues

After the U.S. Air Force became an independent service in 1947, both officers and enlisted personnel continued wearing the Army uniform until the distinctive blue uniform became available in quantity during 1950.

The late Gen. Hoyt S. Vandenberg has sometimes been referred to as "the father of the Air Force blue uniform" in that he personally made the shade selection. General Vandenberg also directed that the Air Force uniform be a plain but distinctive dress, with the absolute minimum number of badges, insignia, and devices authorized for wear on it. Little change from the original wool serge blue, AF Shade 1084, uniform occurred until the lightweight all-season blue uniform was introduced into the supply system in 1961. In 1969 an updated design uniform was introduced in a darker blue "Air Force Shade 1549" wool/polyester fabric. In 1974 an all-synthetic texturized woven fabric was approved for optional uniforms.

The Air Force is exceedingly proud of the appearance of its personnel. Exhaustive tests are made to provide Air Force members with good quality wearing apparel at a reasonable cost taking into consideration comfort and protection.

The Air Force Uniform Board, formally organized in 1958, plays a key role in the clothing improvement/development program. Proposed changes to uniform clothing items, badges, insignia and/or policy changes on the authorized wear of these items received by the chairman, Air Force Uniform Board are reviewed and staffed prior to preparation of the agenda for consideration by the board members. Formal minutes covering the board's deliberations and recommendations are prepared and submitted to the Chief of Staff for review and final decision.

Uniform development action is accomplished by the Air Force Systems Command's Clothing Laboratory at Wright-Patterson Air Force Base, Ohio, either through contracts with industry or "in-house" prototype fabrication. Prototypes are reviewed by the Uniform Board which selects one for adoption, or recommends that a service test of two or more prototypes be conducted to determine the item to be adopted. When a uniform item is to be service tested, distribution of test quantities is made within the Air Force in accordance with a plan approved by the Chief of Staff. The test results are reviewed by the Uniform Board and a recommendation formulated. The final decision to either adopt or reject the uniform change is made by the Chief of Staff. If adoption is approved, specifications are written and patterns are developed by the clothing laboratory for the approved items.

All items introduced into the system which are to be standard items must go through the Department of Defense standardization process. Standardization action requires that new items be reviewed to avoid introducing special (distinctive) items for each Military Service where one standard item will satisfy all or most requirements. Footwear, utility uniforms, socks, and undergarments are examples of this standardization program.

The Air Force Logistics Command (AFLC) through its Air Force Services Office (AFSO) in Philadelphia furnishes the initial requirements to the Defense Supply Agency (DSA) procuring activity, the Defense Personnel Support Center (DPSC) also located in Philadelphia. The supply package furnished to DPSC includes specifications, patterns, cataloging data and quantitative requirements. AFSO has a small number of highly experienced inventory management specialists, quality assurance specialists, and clothing store management representatives. They work closely with DPSC to assure there is a good supply

The Air Force has long been considered the leader of the Military Services in providing equal opportunity for its women members. Also, the uniforms of the Women in the Air Force (WAF) have led the way in modernization and style.

support posture.

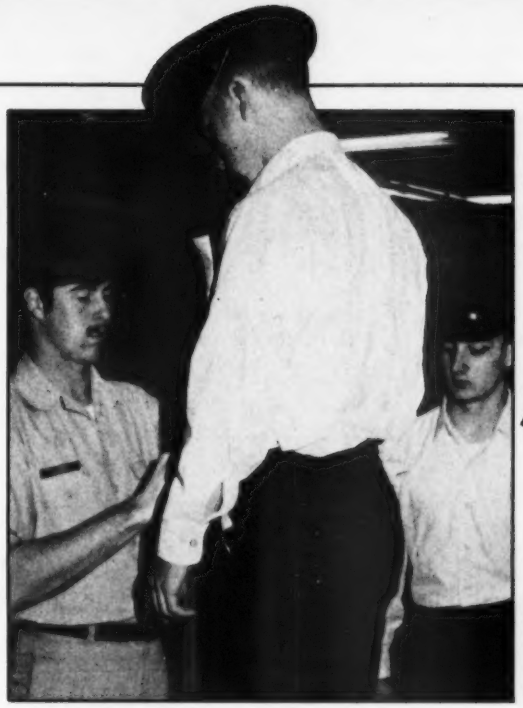
The Air Force Induction Center at Lackland Air Force Base, San Antonio, Texas, is the largest single user of Air Force uniform clothing items. At peak capacity, 1,000 airmen can be processed through the clothing issue line in one day. From the beginning, where all men receive their socks, to the end, when they march out with all their military clothing, the processing line operates like an efficient assembly line. Expert fitters and tailors are on hand at each station along the line. Clothing requiring alterations is chalked, tagged, and forwarded to the tailor shop.

In addition to the clothing issue line for men at Lackland Air Force Base, there is a modern processing line for women, popularly known as "The House of Fashion," which uses the very latest commercial fashion techniques found in the most up-to-date dress shops.

Each woman receives the personal attention of an expert fitter. In addition, there is a continuing effort to modernize and improve the Air Force women's attire through redesign with accent on style and comfort.

Uniform clothing is provided to airmen by means of a Clothing Monetary Allowance System. Under this system, responsibility for maintaining the military wardrobe is passed to the airman. Initially an airman is provided with sufficient clothing items to adequately equip him for any possible global assignment. After six months of service, the airman receives a cash monthly clothing maintenance allowance with which to replace and/or repair his initial clothing allowance. The Air Force clothing stores provide a ready source for the purchase of replacement items.

Even with inflation, the Air Force has managed to keep the price of the Air Force uniform low because it buys from DPSC in such large quantities. The price of the Air Force "clothing bag" is currently $284.69 for all uniform items issued to male basic trainees at the Air Force Induction Center, whereas the value of the "clothing bag" back in 1957 was $209.40.

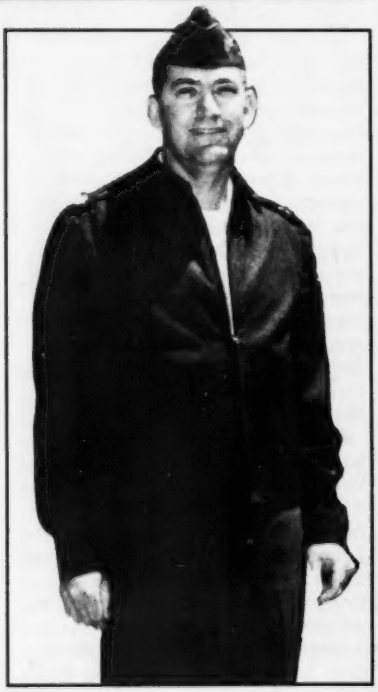


The Air Force has various uniforms to fit various needs. Above, a fitter checks a recruit's class "A" for fit at the clothing issue section at Lackland Air Force Base, Texas. Top right is the Security Police fatigue uniform. At left is the woman officer's winter mess dress with ankle-length skirt and below are flight uniforms of a helicopter crew.

The 131 Air Force clothing stores located throughout the world provide a ready source where airmen may purchase needed replacement items. These stores requisition uniform clothing items direct from the procuring agency (DPSC) and operate on a nonprofit basis since these items are sold to airmen at cost. If an item needs alteration, this service is provided to enlisted personnel, at the time of purchase, without charge.

A service-test was conducted at four Air Force bases during 1973-1974 to determine if cost savings to the government, with no compromise in availability and price of clothing items or service, could be realized if the clothing stores were operated by the Army and Air Force Exchange Service. (AAFES). AAFES would be reimbursed for service provided on a percentage basis based on total sales. The test results indicated that operation of the Air Force clothing stores by AAFES would be cost effective, and provide for convenient one-stop and comparative shopping. Final decision is pending.

At left are three examples of pantsuits for Air Force nurses. The uniforms were field tested in various U.S. Air Force hospitals. Above is the crew of an Air Force SR-71 in pressurized flight suits and at right is the lightweight windbreaker jacket for both officers and enlisted personnel.



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